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Soluble HLA-I and HLA-II Molecules Are Potential Prognostic Markers of Progression of Systemic and Local Inflammation in Patients with COPD

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Abstract

Soluble molecules of the major histocompatibility complex play an important role in the development of various immune-mediated diseases. However, there is not much information on the participation of these proteins in the pathogenesis of chronic obstructive pulmonary disease (COPD). The aim of our work was to determine the content of soluble molecules of the major histocompatibility complex of classes I and II (sHLA-I and sHLA-II) in the exhaled breath condensate (EBC) and in the blood serum in patients with moderate to severe COPD during the exacerbation and stable phase. We investigated 105 patients (male) with COPD aged 46-67 and 21 healthy nonsmoking volunteers (male) comparable in age. The content of sHLA-I and sHLA-II molecules was studied using ELISA. We found an increase in the level of sHLA-I and sHLA-II molecules in EBC, as well as an enhancement in the serum content of sHLA-II in all the examined COPD patients compared to healthy nonsmoking volunteers. The revealed negative correlation between the serum concentration of sHLA-II and values of FEV1 and FEV1/FVC in all examined patients with COPD gives a possibility to consider the content of these proteins as an additional systemic marker of disease severity. The maximum endobronchial and serum concentrations of sHLA-I and sHLA-II were detected in patients with severe COPD during the exacerbation. The negative associations between the content of these molecules in EBC and serum and the parameters of lung function in patients with severe COPD were established. These findings suggest a pathogenetic role of sHLA-I and sHLA-II molecules in the mechanisms of the development and progression of local and systemic inflammation in COPD.

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